

## **CEN/TC 264 – EUROPEAN STANDARDS FOR CLEAN AIR**

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### **ABSTRACT**

The realisation of the growing European Single Market results in the fact that more and more national legal rules originate in guidelines, ordinances and decisions of the European Union (EU). Especially in the section of environmental protection this becomes apparent. Meanwhile 70 % up 80 % of the environmental legislation is not anymore determined by the national member bodies, but takes place in Brussels. For a uniform execution of the EU Directives European Standards are important components. With the preparation of corresponding Technical Guidelines, which also can be ordered by the European legislator, the European Organisation for Standardisation (CEN) becomes of great importance by relieving the legislator and by standardising high performing technologies and equipment which fulfil the so called "State of the Art".

In CEN the technical committee CEN/TC 264 "Air Quality" is responsible for the preparation of European Standards in the section of air quality. CEN/TC 264 was formed in 1991 in Bonn, Germany. At present 20 working groups and two ad-hoc working groups are developing validated European Standards to support the EU legislation. Nearly 70 % of the projects are mandated by the EU and EFTA and are established on the basis of the so-called "New Concept". Being cited in the European legislation the Standards and with that the described measurement technology achieves a high degree of commitment.

### **INTRODUCTION**

The preparation of standards for environmental protection, for environmental technique and for environmental management has made a considerable contribution to today's high level of environmental protection. This becomes possible because of a strong link between legal and technical rules being effective in this field.

The strong link is based on the so called "New Approach". In its resolution of 7 May 1985 which refers to a "New Approach" in the field of technical harmonisation and standardisation the European Council decided a division of work between the European legislator and private standardisation. The division of work is based on the principle that the European legislator limits the harmonisation of official regulations to basic necessities and commissions the private standardisation bodies, such as CEN, with the preparation of European Standards for the regulation of technical matters, taking into account the current state of the art of science and technology. By being linked to European legislation, European Standards become an important component for policy and for the coherent application of EU Directives.

These principles which originally started from industrial standardisation also aim for EU Directives regarding environmental protection. The EU Directive on the Incineration of Hazardous Waste [6], the EU Directive on Integrated Pollution Prevention and Control

(IPPC) for the specification of the "Best Available Techniques" [1] and the EU Directive on Air Quality Assessment and Management [2], also called the Framework Directive, and its Daughter Directives [3, 4, 5 and 7] are current examples. In the Framework Directive and its Daughter Directives for 13 harmful substances limit respectively target values and assessment methods are fixed. Measurement aspects for the determination of substances in emission or in the ambient air are not included in the EU Directives. For the performance of measurement tasks reference is made to European Standards prepared by CEN/TC 264 "Air Quality".

## **EUROPEAN STANDARDISATION – CEN**

The majority of the current National Members founded the European Committee for Standardisation, CEN, in 1961. It was first based in Paris under the aegis of AFNOR (the National Member for France). In 1975, CEN moved to Brussels, acquired formal statutes and was registered as a non profit-making, international, scientific and technical institution. The CEN members (currently 28) are the standardisation bodies of all European (EU) and EFTA countries. The National Members approve the annual budget of CEN and elect its Secretary General in the statutory General Assembly convened by its President. They furnish the secretariats of CEN technical committees.

The Technical Board (BT) controls the CEN standards programme. The BT is responsible for the development of technical policies and for the overall management of technical activities to guarantee coherence and consistency of the CEN standardization activities system-wise. The BT promotes the execution of the standards programme by the CEN Management Centre (CMC), the technical committees (TCs) and other bodies.

CEN works through procedures which guarantee respect for the following principles:

- **openness and transparency:** all interested concerns take part in the work
- **consensus:** European Standards (ENs) are developed on the basis of voluntary agreement between all the interested parties
- **national commitment:** formal adoption of European Standards is decided by a weighted majority vote of all CEN National Members and is binding on all of them
- **technical coherence at the national and European level:** standards form a collection which ensures its own continuity for the benefit of users, both at European and national level levels through compulsory national implementation of European Standards and withdrawal of conflicting national standards
- **correct integration with other international work:** wherever possible CEN works with other European bodies (aerospace, iron and steel, open systems and electronic data interchange) and the International Organization for Standardization (ISO).

The standardisation work of CEN is presently performed in more than 300 active TCs and their working groups. The topics which are handled range from chemistry, construction, environment, metrology, occupational health and safety up to utilities and materials, transport and packaging, machinery and materials.

An European Standard is not a standard on its own. It is a document in three languages, namely English, French and German. The Members develop and vote for the ratification of European Standards (qualified majority). All CEN members must implement such standards

as national standards without any alterations disregarding how the single member countries voted and must withdraw all conflicting national standards on the same subject.

For the structure, drafting and presentation of ENs and for the implementation of ENs at national level rules are set out in the CEN/CENELEC Internal Regulations (PNE Rules), in order to ensure that the technical content and presentation are identical in all member countries. In Figure 1 a simplified flowchart shows the approval procedure of an EN.

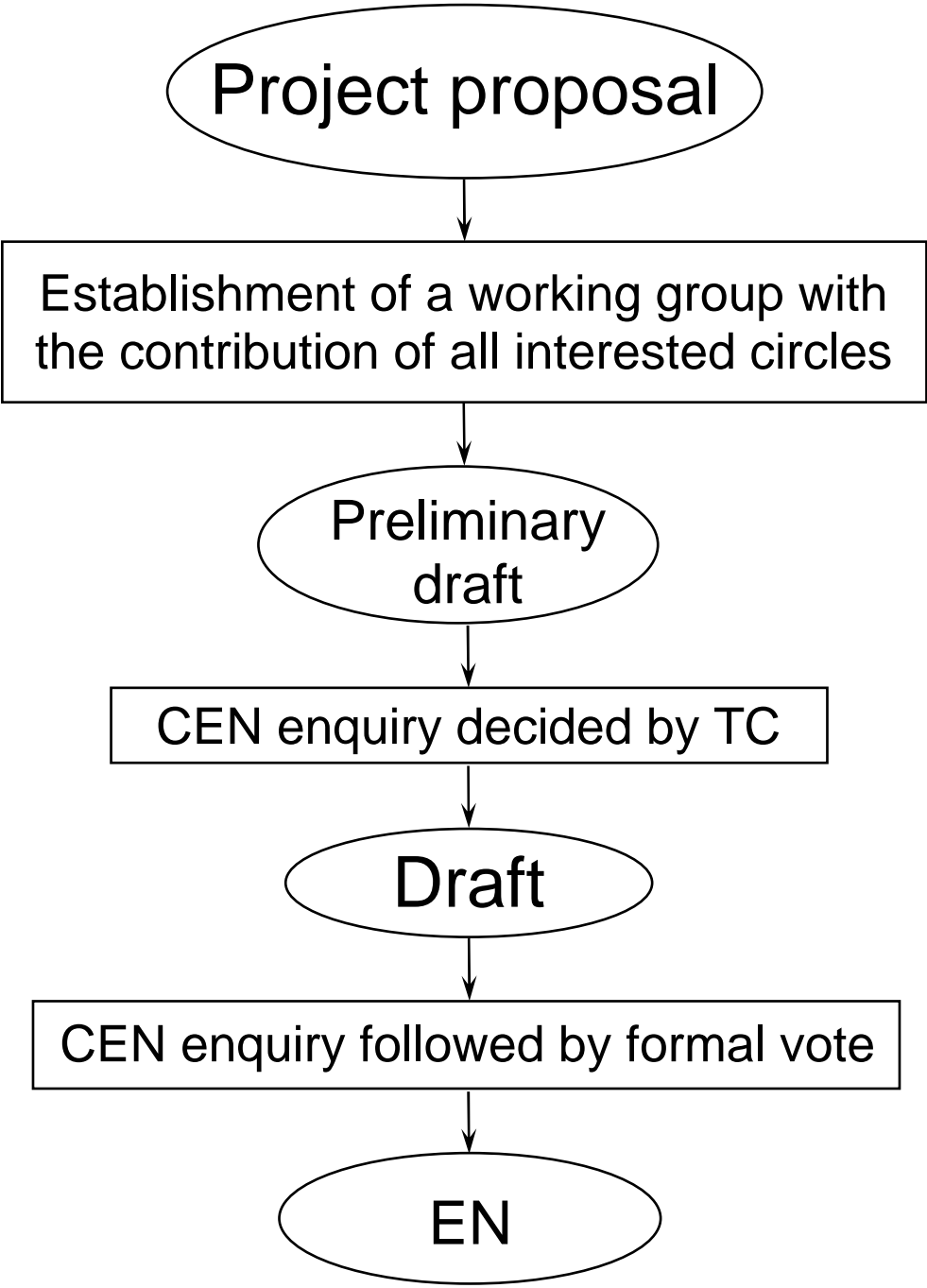


Figure 1. Simplified flowchart of the approval procedure of an European Standard (EN)

Besides the **normative European Standards** also the following document types can be prepared by CEN:

- **Technical Specifications** (CEN/Ts; formerly European Prestandard (ENV))  
normative document where the state of the art is not stable enough
- **Technical Reports** (CEN/TRs, formerly CEN Report (CR))  
for information and transfer of knowledge
- **CEN Workshop Agreements** (CWAs)  
consensual agreement based on deliberations of open Workshops with unrestricted direct representation of interested parties
- **CEN Guide**  
giving information about standardization principles and guidance to standards writers

### **EUROPEAN AIR QUALITY STANDARDS – CEN/TC 264 "AIR QUALITY"**

In April 1990 the Commission on Air Pollution Prevention of VDI and DIN ([www.krdl.de](http://www.krdl.de)) - in its function as a DIN Standards Committee - applied at CEN for the establishment of a technical committee for air quality. In March 1991, CEN/TC 264 "Air quality" was founded in Bonn, Germany, at an inaugural meeting of representatives of standardisation bodies of CEN national members.

In order that TC 264 could take on a wide spectrum of work to assist European policy makers, the scope for TC 264's work was made sufficiently broad. Standardisation of tools for air quality characterisation of emissions, ambient air, indoor air, gases in and from the ground and deposition, in particular measurement methods for air pollutants (for example particles, gases, odours, micro-organisms) and methods for the determination of the efficiency of gas cleaning systems. Excluded from treatment are the establishment of limit values for air pollutants, radioactive substances and workplaces as well as cleanrooms.

The principle objectives of TC 264 are to produce standards as tools for the characterisation of air quality:

- which are providing measurements with known quality and reliability, obtained as a result of field validation trials,
- which ensure the provision of comparable results throughout Europe, and,
- which support European environmental policy, EU Directives and industry,
- which are appropriate to avoid the risks (for human health and environment) of producing air quality data that are not sound and harmonised within Europe.

The preparation of European Standards started in 1991. The EU Directive regarding the combustion of hazardous waste [6] and the EU Framework Directive [2] with its Daughter Directives [3, 4, 5, 7], which were also under preparation at that time, were the starting points for the standardisation projects of CEN/TC 264.

In EU Directive 94/67/EG regarding the combustion of hazardous waste [6] and also in the Directive on the limitation of emissions into the air from large combustion plants [8] the determination of emissions and the calibration of automated measurement devices is specified with reference to standardised reference methods described by CEN. The EU Framework Directive [2] and the Daughter Directives [3, 4, 5 and 7] also require the determination of

different harmful substances using reference measurement methods fixed in European Standards.

Work on new standard methods is only started following a formal vote of CEN national members, with sufficient members agreeing to put forward experts, and the provision of a convenor and a secretariat for the new working group. TC 264, at the moment, is managing 20 active working groups and two ad-hoc working groups (see Table 1). As can be seen from the following chart, the majority of the work being done is on stack testing and ambient air monitoring:

Ambient Air	Air in Stacks	Indoor Air
WG 6 PM10 **	WG 1 Dioxins	WG 7 Bldg mats *
WG 11 Diffusive *	WG 2 Odours **	
WG 12 SO <sub>2</sub> /NO <sub>x</sub> *	WG 3 HCL **	
WG 13 Benzene *	WG 4 TOCs **	
WG 14 Metals *	WG 5 Dust *	
WG 15 PM <sub>2,5</sub> *	WG 8 Mercury *	
WG 18 Open path	WG 9 QA of AMS **	
WG 20 Metals dep.	WG 10 Metals **	
WG 21 B[a]P	WG 16 SO <sub>2</sub> /NO <sub>x</sub> *	
	WG 17 Fugitives	
	WG 19 Monitoring	
	WG 22 Cert. Scheme AMS	
	WG 23 vol. Flow	** completed
	WG 24 GHG, esp. CO <sub>2</sub>	* at least CEN Enquiry

For the performance of special standardisation work, e.g. such which is linked to EU legislation, the EU and EFTA can give official mandates to CEN. In TC 264 nearly three-thirds of the working groups (see table 1) received a mandate and additionally financial support by the EU and EFTA (100 % support for the validation measurements; 50 % support for preparing the standard). The financial support enables TC 264 to describe in its European Standards validated measurement methods which verified comparability.

The European Standards of TC 264 describe complete measurement methods. All information which are necessary to perform the measurements are included in the standard, which is (in the case of standards for the implementation of the EU Framework Directive) structured as follows:

- **Range of application** - concentration levels for which the method applies
- **Method description** - sampling, sample preparation, calibration and analysis
- **Determination of performance characteristics** - traceability, measurement uncertainty
- **Performance characteristics of the standard method** - results of laboratory and field validation

- **Recommendations for use** - field operation and QA/QC aspects

	<b>Title</b>	<b>Secretariat</b>	<b>EC Mandate</b>
WG 1	Dioxins/Emissions	DIN, Germany	
WG 2	Air quality - Determination of odour concentration by dynamic olfactometry <u>work finished</u>	NEN, The Netherlands	
WG 3	HCl emission/Manual method <u>work finished and WG disbanded (1998).</u>	AFNOR, France	X <sup>1)</sup>
WG 4	Total gaseous organic carbon (emissions) <u>work finished</u>	BSI, United Kingdom	X <sup>1)</sup>
WG 5	Total dust at low concentrations (emissions)	AFNOR, France	X <sup>1)</sup>
WG 6	Suspended particulate matter below 10 µm (ambient air) <u>work finished and WG disbanded (1999).</u>	DIN, Germany	X <sup>2)</sup>
WG 7	Indoor air quality - Emission of chemical substances from building materials	SIS, Sweden	
WG 8	Measurement of total mercury emission	NEN, The Netherlands	X <sup>1)</sup>
WG 9	Quality assurance of automated measuring systems	DS, Denmark	X <sup>1)</sup>
WG 10	Determination of the total emission of specific elements <u>work finished and WG disbanded (2004).</u>	DIN, Germany	X <sup>1)</sup>
WG 11	Ambient air quality - Diffusive samplers for the determination of gases and vapours	NEN, The Netherlands	
WG 12	Reference method for determination of SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub> /CO in ambient air	NEN, The Netherlands	X <sup>2)</sup>
WG 13	Reference method for determination of benzene in ambient air	DS, Denmark	X <sup>2)</sup>
WG 14	Reference method for determination of Pb/Cd/As/Ni in ambient air	DIN, Germany	X <sup>2)</sup>
WG 15	Reference gravimetric measurement method for the determination of the PM <sub>2.5</sub> µm mass fraction of suspended particulate matter in ambient air	DIN, Germany	X <sup>2)</sup>
WG 16	Reference measurement methods for NO <sub>x</sub> , SO <sub>x</sub> , O <sub>2</sub> , CO and water vapour emissions	AFNOR, France	X
WG 17	Fugitive and diffuse emissions of common concern to industry sectors	DIN, Germany	X
WG 18	Open path optical measurement methods	DIN, Germany	
WG 19	Emission monitoring strategy	BSI, United Kingdom	
WG 20	Deposition measurement of heavy metals and metalloids	NSF, Norway	pending
WG 21	Measurement method for B[a]P	DIN, Germany	X <sup>2)</sup>
WG 22	Certification scheme for automatic measurement systems	BSI, United Kingdom	
WG 23	Manual and automatic measurement of velocity and volumetric flow in ducts	DS, Denmark	pending
WG 24	Quantification of green house gases, especially CO <sub>2</sub>	DIN, Germany	pending
ah-WG	Uncertainty	DIN, Germany	
ah-WG	Mercury in ambient air	NEN, The Netherlands	pending

<sup>1)</sup> Mandate for EU Directive 94/67/EC "Incineration of hazardous waste" [6]

(2004-07-01/pe)

<sup>2)</sup> Mandate for EU Directive 96/62/EC Framework Directive [2]

Table 1. Working groups and ad-hoc working groups (ah-WG) of CEN/TC 264 "Air Quality" (creation: 1990; Chairman: Peter Blinksbjerg, FORCE Technology, Soeborg, Denmark; Secretary: Dr. Rudolf Neuroth, KRdL of VDI und DIN, Düsseldorf, Germany)

#### 4. CONCLUSIONS

The strong link between technical and legal rules in Europe clearly shows the significance of standardisation in the field of air quality. The European Standards for air pollution prevention achieve a high degree of commitment by being linked to European legislation. For the European standardisation organisations this practised "division of work" with the EU legislator means without any doubt an endorsement of their work and contributes significantly to deregulation.

In Europe it is the task of CEN to prepare European Standards (ENs) and the task of CEN T C 264 "Air Quality" to establish ENs in the field of air quality. ENs issued by TC 264 describe validated measurement methods which verified comparability. For the performance of measurement tasks reference is made to these ENs by the EU legislator in various EU Directives [2 to 8]. With its standards TC 264 notably contributes to a uniform and coherent way of the implementation of EU Directives.

More information on CEN and CEN/TC 264 is available on the internet ([www.cenorm.be](http://www.cenorm.be), [www.krdl.de](http://www.krdl.de)).

#### REFERENCES

- [1] Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control; Official Journal L 257 , 10/10/1996 P. 0026 – 0040
- [2] Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management; Official Journal L 296 , 21/11/1996 P. 0055 – 0063
- [3] Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air; Official Journal L 163 , 29/06/1999 P. 0041 – 0060
- [4] Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air; Official Journal L 313 , 13/12/2000 P. 0012 – 0021
- [5] Directive 2002/3/EC of the European Parliament and of the Council of 12 February 2002 relating to ozone in ambient air; Official Journal L 067 , 09/03/2002 P. 0014 – 0030
- [6] Council Directive 94/67/EC of 16 December 1994 on the incineration of hazardous waste; Official Journal L 365, 31/12/1994 P. 0034 – 0045
- [7] European Parliament legislative resolution on the proposal for a European Parliament and Council directive on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (COM(2003) 423 - C5-0331/2003 - 2003/0164
- [8] Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants, Official Journal L 309 , 27/11/2001 P. 0001 - 0021